

## RESEARCH INITIATIVES

## Biomedical Research Goes Green

Voluntary standards for “greening” the biomedical research industry were the focus of a 1–2 November 1999 conference held at the National Institutes of Health (NIH) campus in Bethesda, Maryland. The conference was organized by the National Association of Physicians for the Environment (NAPE), the Association of Higher Education Facilities Officers, the NIEHS, the Environmental Protection Agency (EPA), and some 60 other sponsors. NIEHS director Kenneth Olden described the conference—attended by physicians, education specialists, federal scientists and managers, and industry and academic professionals—as a triggering event that should catalyze worldwide efforts to reduce waste and increase energy efficiency within the biomedical community. In addition, training in green research will have a major impact as postdoctoral students begin to move into the industry.

Although the biomedical research community produces less than 0.1% of all the dangerous wastes regulated by the EPA, some biomedical wastes such as mercury from fluorescent lights, dioxin, chemical reagents, the cadmium in red biohazardous waste bags, infectious wastes, and di(2-ethylhexyl) phthalate leaching from the polyvinyl chloride plastics in tubing can persist in the environment and are hazardous to human health. Moreover, biomedical laboratories use five times more energy and water per square foot, on average, than typical office spaces, said speaker Romulo L. Diaz, Jr., an assistant administrator at the EPA. Some scientists believe that all that fossil fuel use may contribute to global warming, ultimately affecting human health in a negative way, Diaz said.

A legislative push by Representative John E. Porter (R-Illinois) to increase biomedical research funding by 15% annually over the next three years has raised the possibility of tighter environmental controls to counteract the resulting increase in biomedical research projects. Other helpful measures to prevent excess waste include

improved biomedical facility design, laboratory substitutions, scaled-down experiments, and recycling of reagents. NIH environmental health specialist Edward H. Rau said that training efforts at the NIH, for instance, effectively cut radioactive waste from a high of 2,000 liters per month in the early 1990s to about 200 liters monthly today.

In the coming months, committees established by conference participants will develop an online clearinghouse of “environmental best practices” for researchers and laboratory managers, to be housed at the NAPE Web site (<http://www.napenet.org/>). Samuel H. Wilson, deputy director of the NIEHS, said that online tracking of environmental regulations affecting the biomedical research community should also be considered.

Conference participants also will push for research focusing on biomedical waste disposal and energy-efficient facilities while promoting education and training for scientists, said NAPE president Byron J. Bailey. Such efforts may draw on existing resources such as the NIEHS Worker Education and Training Program and the Howard Hughes Medical Institute’s environmental health and safety initiative.

Several speakers suggested that new regulations might be unnecessary if the industry embraces voluntary strategies for improving environmental practices, such as selecting mercury-free fluorescent lights and planning experiments to use fewer potentially hazardous reagents. Voluntary goal-setting efforts

already in place include the EPA’s Laboratories for the 21st Century initiative (which calls for improved energy efficiency in all EPA facilities), an American Hospital Association/EPA program to reduce mercury waste by 50% by the year 2010, and projects by the activist coalition Health Care Without Harm to eliminate nonessential incineration of medical wastes and phase out the use of polyvinyl chloride plastics, thereby reducing dioxin production and concentrations of di(2-ethylhexyl) phthalate. A monograph based on papers presented at the conference will be published as a supplement to *EHP*. —Ginger Pinholster



**A new look for labs.** New guidelines mean biomedical research processes will be healthier for the environment.



## Healthier Hotel Rooms

New measures offer hope for better traveling conditions for allergy sufferers. Cleaning solutions, dust mites, improperly maintained ventilation systems, and even dyes in hotel room carpet can all trigger allergic reactions, forcing some people to pack their own linens, carry disinfectants, or limit their hotel stays. Now, several hotel chains are addressing these problems. The Sheraton Rittenhouse Square Hotel in Philadelphia, Pennsylvania, is designed to be allergen-free: guest rooms feature filtered air, recycled carpet, dye-free linens made of organically grown fibers, and natural soaps and shampoos. All guests must sign agreements that they will not smoke in the hotel, and the cleaning staff uses only environmentally friendly cleaning products. Similarly, U.S. Franchise Systems in Atlanta, Georgia, has recently started offering chemical-free rooms in several of its hotels and will extend the program nationwide if it proves successful.

## Fighting Cancer with Nuclear Waste

A cancer treatment that uses a by-product of nuclear weapons production has been developed and patented by researchers at Pacific Northwest National Laboratory. The treatment’s main component, an ultra-pure form of yttrium-90, is extracted from strontium-90 and linked with peptides that target cancerous cells. Once the preparation has been injected and enters the tumor, the peptides bind to the cancerous cells and emit potent doses of radiation.

The treatment causes few side effects, can be delivered on an outpatient basis, and minimizes the radiation’s damaging effects on healthy tissue surrounding the tumor. Clinical trials are being conducted on brain cancer patients at University Hospital in Basel, Switzerland.

## The High Price of Water

At its August 1999 meeting in Stockholm, Sweden, the World Commission on Water for the 21st Century presented findings from an ongoing project that suggest that poor people in developing countries pay an average of 12 times more per liter of water than citizens connected to municipal water systems. Despite the price, these people get water of inconsistent quality—often bacteria-infested—that they can seldom afford to sanitize.

The commission found that in Bangladesh, boiling water costs the poorest families a staggering 11% of their income. In Peru, where citizens are warned to boil their drinking water for 10 minutes due to an outbreak of cholera, the cost has prevented many from doing so.

The cost of providing universal water access by 2010 is estimated to be \$25 billion annually. The poorest developing countries are unlikely to be able to finance such development.